CLAIM

I claim:

1. A hand free device commonly shared by multiple communication devices, comprising a micro processor, one or more than one Input/Output or I/O interfaces, a multiplexer control unit, one or more than one multiplexers, a voice processing unit, a speaker amplifying and control unit, a microphone amplifying circuit, a dialing unit, a charging and power supply unit and an artificial interface, working in combination with a speaker and a microphone; wherein

said micro processor is used to coordinate the operation of an individual circuit of all units of said hand free device;

said one or more than one I/O interfaces of communication devices is controlled by said micro processor to convert input signals from said communication devices of various types and brands into manageable signals for the use of rear terminals;

said artificial interface enables a user to input operational settings;

said one or more than one multiplexers have respectively at least one or more than one logic switch controlled by flagpole signals of said multiplexer control unit to judge that part or whole signals of said communication devices are able to be input or output via said logic switch;

said multiplexer control unit is subject to the control of said microprocessor to control by

means of flag poles the operation of said multiplexers;

said voice processing unit subject to the control of said microprocessor is used to regulate the input and output of voice;

said speaker amplifying and control unit under the control of said microprocessor receives and amplifies voice signals transmitted from said voice processing unit to control a speaker to broadcast the processed voice;.

said microphone amplifying circuit is used to amplify acoustic signals input from said microphone for the use of rear end.

said charging and power supply unit subject to the control of the microprocessor supplies electrical power to said communication devices and charges batteries thereof;

said dialing unit can cooperate with a matrix of press buttons, a voice controlled input device to permit a user to make direct dialing operation without use of original pressing buttons on said communication devices;

whereby a single hand free device can be simultaneously coupled to more than one communication devices.

2. The hand free device commonly shared by multiple communication devices as claimed in claim 1 wherein said I/O interfaces are coupled to the hand free device and the I/O terminals of said communication devices by way of a number of electrical circuits; said electrical circuits include:

a voice signal output line outputs at one end from the hand free device and is coupled at

the other end to the input terminal of said I/O terminals of said communication devices; and elements like an amplifier and capacitors (or resistors) and etc. are mounted in serial to this line;

a voice signal input line inputs to said hand free device at one end and is coupled to an output terminal of I/O terminals of said communication device; and an amplifier and capacitors (or resistors) and etc. are mounted in serial thereto;

a charging line is coupled at one end to said hand free device, and is connected at the other end to a charging terminal of the I/O terminal of a communication device, and on the line is disposed a charging control circuit which controls the activation of a charging operation and the output charging voltage;

a charging control line for transmission of an input signal of said charging control line to control an operation of a charging control circuit which outputs different voltages according to signals of said charging control line in match with coupled communication devices;

a dialing control line for transmission of control signals of said dialing unit to control an operator of said I/O interfaces;

a common dialing signal line foe transmission of dialing control signals has one end coupled to said dialing unit and the other end connected to said operator of said I/O interfaces;

a flag pole control line for transmission of flag pole signals to said multiplexers to advise if said I/O interfaces have been coupled to said communication devices;

a communication device working time pulse input line is used to transmit working time pulses of said communication devices so as to permit said hand free device to operate in synchronism with said communication devices; one end of said pulse input line is coupled to said communication devices and an opposite end thereof is connected to said operator of said I/O interfaces;

a communication device analog signals input line is used for transmission of control signals between said communication devices and an operator of said I/O interfaces;

an operator is activated by signals transmitted via an analog signal input line of said communication devices and outputs control signals of if said I/O interfaces are in operation to an rear end of said hand free device for use.

3. The hand free device commonly shared by multiple communication devices as claimed in claim 1 wherein said I/O interfaces can operate in combination with digital type communication devices, said I/O interfaces include:

a voice signal output line is connected to a hand free device at one end for input and is coupled to the output terminals of the I/O terminals of said communication devices at the other end, and on said voice signal output line are serially connected to one another an amplifier, capacitors (or resistors) .

a voice signal input line is connected to a hand free device at one end for output and is coupled to input terminals of I/O terminals of said communication devices at the other end, and on the line are serially connected to one another an amplifier, capacitors (or resistors) and

etc..

a charging line has one end coupled to said hand free device and another end connected to a charging terminal of said I/O terminals of said communication devices; on said charging line is disposed a charging control circuit which controls the activation of the line and the output charging voltage thereof.

a charging control line is used to transmit the input signal of said charging and power supply unit to control the operation of said charging control circuit;

a dialing control line transmits control signals of said dialing unit to control an operator of said I/O interfaces;

a common dialing signal line serving to transmit the signals of the dialing unit has one end coupled to said dialing unit and the other end connected to an operator of said I/O interfaces;

a flagpole control line is used to transmit flagpole signals to said multiplexer control unit to advise the same if said I/O interfaces have been connected to said communication devices;

a communication device signal input line is used to transmit the control signals between said communication devices and an operator of the I/O interfaces and the input and output message signals in communication; on said line is disposed a programmable logic IC;

an operator is activated by signals transmitted via said communication devices, signal input line to output a control signal to a rear end of said hand free device to advise if said I/O interfaces are in operation or not;

a programmable logic IC is used to code input and output data;

a shift temporary register serves to permit an AD converter and said programmable IC to temporarily store corresponding code data therein;

an AD converter is used to convert the input/output signals into another operation mode applicable to a rear end of the next components; converting digital signals into analog signals or analog signals into digital signals;

a shift control line permits said communication devices to input control signals.

4. The hand free device commonly shared by multiple communication devices as claimed in claim 1 wherein said I/O interfaces can operate in combination with a speaker of a stereo system of a vehicle without using an external speaker.

5. The hand free device commonly shared by multiple communication devices as claimed in claim 1 wherein said I/O interfaces and said communication device are coupled to each other by a plug hole, signal cable or other available forms.

6. The hand free device commonly shared by multiple communication devices as claimed in claim 1 wherein said voice processing unit generally relates to a means for conducting acoustic adjustment to eliminate noise, echo, and to increase or decrease amplitudes and the like.